

## Progress of Schemes Implemented by TANHODA

Financial: Rupees in Lakhs

| Sl. No.      | Name of the Scheme  | Unit      | 2013-14  |        |                   |                  | 2014-15             |                   |
|--------------|---|-----------|----------|--------|-------------------|------------------|---------------------|-------------------|
|              |   |           | Physical |        | Financial         |                  | Target              |                   |
|              |   |           | Target   | Achmt. | Target            | Achmt.           | Phy.                | Fin.              |
| 1            | Mission on Integrated Development of Horticulture National Horticulture Mission             | Ha.       | 10,215   | 10,215 | 9,675.232         | 9,097.39         | 15,870              | 12,700.00         |
| B            | National Bamboo Mission   | Ha.       | 0        | 0      | 0                 | 0                | 310                 | 186.029           |
| 2            | National Mission on Micro Irrigation  | Ha.       | 22,700   | 39,780 | 17,775.000        | 16,792.00        | Subsumed under NMSA |                   |
| 3            | National Mission on Sustainable Agriculture Micro Irrigation under On Farm Water Management | Ha.       | -        | -      | -                 | -                | 34,373              | 24,290.00         |
| B            | Rain fed Area Development   | Ha.       | -        | -      | -                 | -                | 3,120               | 1,041.665         |
| 4.           | National Mission on Medicinal Plants  | Ha.       | 7,480    | 7,480  | 1,026.939         | 1,026.939        | 8,232               | 1,323.075         |
| 5.           | State Horticulture Farms  | Lakh Nos. | 189      | 179    | 1,986.861         | 1,616.45         | 200.24              | 2,079.43          |
| 6.           | Tamil Nadu IAMWARM  | Ha.       | 7,500    | 7,408  | 1,350.590         | 1,314.241        | -                   | -                 |
| <b>TOTAL</b> |   |           |          |        | <b>31,814.622</b> | <b>29,847.02</b> |                     | <b>41,620.199</b> |

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on credit (or) cash basis to government institutions, Co-operative societies, Hospitals, factories, Clubs and Hotels.

### 5 a) Special Purpose Vehicle – for supply of quality Agricultural and Horticultural inputs and Water Soluble Fertilizers

Hon'ble Chief Minister for Tamil Nadu under Rule 110 during the Tamil Nadu Legislative Assembly on 06.05.2013 announced that a Special Purpose Vehicle will be established at the Commissionerate of Horticulture for assured and timely supply of quality inputs to the farmers under the various Agricultural and Horticultural schemes. Accordingly, orders were issued that TANHODA will serve as a Special Purpose Vehicle for procurement and supply of liquid fertilizers and seeds. An interest free amount of Rs. 50 Crores (Rupees Fifty Crores only) was released as revolving fund and deposited in the TANHODA SPV account. The Governing Council of TANHODA will act as Empowered Committee for the Special Purpose Vehicle. To assist the Empowered Committee, Two Technical Committees for purchase of Seeds and plants/ Manures and Fertilizers headed by the Additional Director of Horticulture have been constituted. From this year, Water Soluble Fertilizers and seeds will be procured through Special Purpose Vehicle, and supplied to the farmers in time.

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## 5. TAMIL NADU HORTICULTURAL PRODUCERS CO-OPERATIVE ENTERPRISES LIMITED (TANHOPE)

To benefit small and marginal horticultural farmers in order to encourage Horticultural activities with good market linkage, Tamil Nadu Horticultural Producers Co-operative Enterprises Limited (TANHOPE) was registered in the year 1994 as a primary Horticultural Co-operative Society under Tamil Nadu Co-operative Societies Act 1983.

The area of operation of the institution is entire state of Tamil Nadu. The President is the head of TANHOPE and Joint Director of Horticulture is the Managing Director. So far 3,936 Horticultural crop growers have been enrolled in this society by paying Rs.100/- as share capital.

The main activity of TANHOPE is to supply inputs required for Horticulture schemes implemented by Department of Horticulture and Plantation crops. TANHOPE facilitates joint venture with private partners to help the farmer to market their produce and to get reasonable price. Procurement centres at Salem and Ottanchatram, procure and market fruits and vegetables to Ulavar sandhai, Government institutions, Co-operative societies, Hostels, etc.

The mandates of TANHOPE are to promote and encourage the development of Horticulture crops and to organize value addition and marketing of fruits and vegetables on modern lines by means of grading, sorting and standard packaging, marketing on Co-operative basis and marketing through retail outlets and branches to undertake export of fresh and processed produces. The most important activity is to supply horticultural produce

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## 6. AGRICULTURAL ENGINEERING

### 1. Introduction

Soil and water conservation, Irrigation water management and Agricultural Mechanisation hold the key to achieve goals of the Second Green Revolution. The Agricultural Engineering Department, apart from promoting farm mechanisation, is engaged in the Soil Conservation, Development and Management of the agricultural land and water resources of the State. Ensuring "Water Security" by appropriate use of technology is the focus of the Department. Through integration of on farm development and micro irrigation, the department proposes to move towards saving every drop of rainwater, ensuring more crops per unit of water and adequate supply of water for agriculture. Water Management through on farm development and critical life supporting irrigation are the major strategies of the department contributing to the sustainable increase in agricultural production. Promoting agricultural mechanization to overcome the shortage of farm workers in the rural areas is accorded highest priority.

Agricultural Engineering Department is promoting value addition as a thrust area with an aim to increase farmer's income. The department is focusing on Infrastructure and strengthening of Post Harvest Management infrastructure for value addition of agricultural commodities like Chilly and Onion. Efforts are taken to minimize the Post harvest losses in Chilly and Onion by proper handling and management through Solar Chilly Drier and Onion storage structures. Further, the department has initiated action to promote use of non-conventional energy in Agriculture sector i.e., solar energy which is abundantly available in our State. In addition to Solar PV pumping system linked with micro irrigation farmers are encouraged

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to combine with the judicious use of irrigation water to improve the water use efficiency thereby increasing the Agricultural Production and Productivity.

A number of State, Centrally sponsored and externally aided schemes are being implemented by the department to achieve the objectives mentioned above.

## **2. Soil and Water Conservation Management**

The cultivable land gets slowly degraded due to soil erosion, reduction in soil organic contents, salinity and alkalinity. Water resources available in the State have already been exploited to near maximum level. Hence, the need of the hour is to conserve both - land and water resources for sustainable agriculture. With an aim to prevent soil erosion, land degradation and to improve soil moisture, various Soil and Water conservation programmes are taken up in a larger scale for sustainable increase in agricultural production.

### **2.1. Soil & Water Conservation in River Valley Project Catchments**

Soil & Water Conservation in River Valley Project Catchments is a Centrally Sponsored Scheme being implemented under National Agriculture Development Programme, for prevention of land degradation to reduce siltation in the multipurpose reservoirs, improvement of land capability, soil moisture regime and land use to match land capability in interstate catchments. Under this programme, soil and water conservation measures are taken up in the inter-state river valley catchments of Tamil Nadu. Soil and water conservation measures such as contour bunding, horticultural plantations, drainage line treatments, silt

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works in the Patta lands and it is 5% for SC/ST beneficiaries. The community works and the landslide treatment measures are executed with 100% assistance. In the past three years, totally 1,971 structures have been completed covering a length of 48,094 m with the total expenditure of Rs.1,596.51 Lakhs benefitting 4,781 farmers. During 2014-15, it is proposed to construct 28,643 Meters and 695 nos. of soil and water conservation works under the programme in the Nilgiris at a cost of Rs.707 Lakhs.

### **2.3. Dam Rehabilitation and Improvement Project**

The World Bank aided Dam Rehabilitation and Improvement project (DRIP) has been approved for implementation in 46 Water Resources Dams and 38 Tamil Nadu Electricity Board Dams at a cost of Rs.745.49 Crores for three years starting from the year 2012-13 onwards. This includes catchment area treatment of two reservoirs of Krishnagiri and Kundah by the Agricultural Engineering Department in a period of three years from 2014-15 with a total outlay of Rs.1,541 Lakhs. The main objective of the programme is to prevent land degradation by adoption of suitable soil and water conservation measures in the catchment areas and to reduce siltation of multipurpose reservoirs. The conservation measures like Silt Detention Tanks and a silt monitoring station are proposed to be taken up in the catchment areas of Krishnagiri reservoir.

In the catchment areas of Kundah reservoir, the conservation measures such as drainage line treatment works, terrace/gabion support wall, facial revetment, gabion check dams, river widening and channel alignment, silt detention structures, landslide treatment works and a silt monitoring station are proposed. During 2014-15, it is

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detention structures and water harvesting structures are undertaken in the catchment areas approved by the Soil and Land Use Survey of India and Government of India. The soil and water conservation activities are implemented with 100% assistance and works relating to individual farmer such as horticultural plantations etc., are executed with 50% farmer's contribution. In the past three years, totally 4,052 structures have been completed covering 35,045 Ha. in the districts of Dharmapuri, Krishnagiri and Erode with the total expenditure of Rs.3,585.65 Lakhs benefitting 19,903 farmers. During 2013-14, an area of 10,322 Ha. have been covered and 1,084 structures have been constructed in South Pennaiyar and Mettur river valley catchments in Dharmapuri, Krishnagiri and Erode districts with an outlay of Rs.1,165.28 Lakhs.

During 2014-15, it is proposed to cover an area of 12,551 Ha. and to construct 954 structures in South Pennaiyar and Mettur river valley catchments the programme under NADP in Dharmapuri, Krishnagiri and Erode districts with an outlay of Rs.1,175 Lakhs.

### **2.2. Soil & Water Conservation under Hill Area Development Programme**

With an aim to restore and maintain the ecology of the Nilgiris, Hill Area Development Programme is being implemented in the Nilgiris District. Under this scheme, soil and water conservation measures such as stream training works, drainage line treatment works, community irrigation wells, aligning and lining works to irrigation channel, channel alignment and widening, drying yards and provision of irrigation facilities – check dams, terrace support wall and landslide preventive measures are taken up in the Nilgiris District. The beneficiary contribution is 10% of the cost of

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programmed to implement the programme in Krishnagiri and Kundah reservoir catchments at an outlay of Rs.291 Lakhs.

### **2.4. Revival of Agriculture in fallow land**

To increase the area under cultivation, Hon'ble Chief Minister, on the Floor of the Assembly on 06.05.2013 has made an announcement under Rule 110 that agriculture would be revived in fallow land in an area of 12,500 acres. As per the announcement, the Soil and Water Conservation works namely Land Levelling, Contour bunding / Compartmental bunding and Land development work of chisel ploughing are being taken up in fallow lands and bringing back for cultivation by increasing the area. This pilot scheme "Revival of Agriculture in fallow land" was implemented in the Villupuram district during the year 2013-14 in 100 acres by adopting a unit cost of Rs.8,000/- / acre for one or more of the above said interventions with 50 percent back ended subsidy of Rs.4.00 Lakhs, It has been proposed under TN Vision 2023 that balance area would be covered under PPP mode.

### **2.5. Deepening of Farm Ponds created under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in Ramanathapuram District**

Farm ponds are cost effective Rain Water Harvesting structures which has gained momentum among the farming community. The water stored in the farm pond can be used for supplemental irrigation of dry land crops like pulses and millets during critical stages of growth and at times of scanty rainfalls. Hence, the Hon'ble Chief Minister has announced to form 70,000 farm ponds throughout the State under MGNREGS by the Department of Rural Development.

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Ramanathapuram district, a drought hit district, is largely covered by clayey soil. Hence, Hon'ble Chief Minister during Collector's Conference 2012 had made an announcement exclusively for Ramanathapuram that 5,000 farm ponds dug to a depth of 0.5 m under MGNREGS in Ramanathapuram district would be further deepened to a depth upto 2.0 m by Agricultural Engineering Department. The programme is being implemented with NABARD-RIDF assistance for further deepening of 5,131 Farm Ponds at a total cost of Rs.2,565 Lakhs in 3 phases, i.e., 1,500 Farm Ponds in Phase-1 for the year 2013-14 at a cost of Rs.750 Lakhs, 1,500 Farm Ponds in Phase II for the year 2014-15 at a cost of Rs.750 Lakhs and 2,131 Farm Ponds in Phase III for the year 2015-16 at a cost of Rs.1,065 Lakhs.

During 2013-14, further deepening was completed in 311 Farm Ponds at a cost of Rs.151.14 Lakhs. It is proposed to complete the deepening work in balance 1,189 farm ponds of 2013-14 and in 1,500 targeted ponds during 2014-15 with an outlay of Rs.1,349 Lakhs.

### **2.6. Construction of Farm Ponds under the Integrated Development of Pulses Villages in Rainfed Areas**

Rain water harvesting, conservation and management are very critical for reduction of the adverse impact of the moisture stress and for bringing sustainability in pulses production in dry land agriculture. Farm ponds are the suitable rainwater harvesting and storage structures at farm level. Farm pond facilitates life saving supplemental irrigation at critical stages of crop growth at times of water scarcity. Hence, construction of farm ponds have been carried out under National Agricultural Development Programme in the eight districts of Krishnagiri, Dharmapuri, Vellore, Tiruvannamalai, Salem, Tiruppur, Dindigul and

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measures such as land shaping, pipe laying, construction of contour rubble bunds, contour stone walls and check dams are taken up by the department in the lands owned by the tribal farmers with 100% assistance from the Government. In the past three years, totally 253 structures have been completed covering an area of 1,964 Ha. with the total expenditure of Rs.544.50 Lakhs.

From the year 2013-14, the scheme of soil conservation works in tribal areas has been implemented under the Comprehensive Tribal Development Programme (CTDP) of Adi Dravidar and Tribal Welfare department. During 2013-14, 139 structures have been constructed to cover an area of 647 Ha. at a total cost of Rs.60.16 Lakhs. During 2014-15, it is programmed to cover an area of 433 Ha. and 39 structures to be constructed at a cost of Rs.490.52 Lakhs.

### **3. Water Management**

Tamil Nadu has already exploited nearly 80% of its water potential for irrigation. The demand for water for industrial and domestic purpose is increasing day by day, resulting in the reduction of the water availability for irrigation. Growth in agriculture depends on increasing the efficiency and productive use of water. The water use efficiency of the conventional irrigation methods is abysmally low at about 35 – 50% only. Hence, judicious management of irrigation water has become imperative to significantly improve water use efficiency.

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Tirunelveli. In the past three years, totally, 732 farm ponds have been constructed at a total cost of Rs.543.98 Lakhs.

### **2.7. Rain Water Harvesting and Run off Management Programme**

To improve the moisture regime of the watershed for increased land use, Rain Water Harvesting and Runoff Management structures such as check dams, percolation ponds, farm ponds, new village tanks, Ooranies and recharge shafts are constructed in all districts except Chennai and the Nilgiris. Under this programme, the beneficiaries are required to contribute 10% of the cost of works executed in community lands in cash (5% in case of SC/ST farmers), which will be deposited in the name of the Village Development Association / Watershed Association and the accrued interest will be utilised for the maintenance of assets created in community lands. Works in patta lands are taken up with 90% assistance and the remaining 10% is collected as beneficiary share (it is 5% in case of SC/ST) in the form of cash / labour / material. During the past three years, a total of 908 Rain water harvesting structures have been constructed at a total cost of Rs.997.63 Lakhs.

### **2.8. Soil & Water Conservation in Tribal Areas under Integrated Tribal Development Programme**

The programme is implemented with an objective to develop agricultural lands in the tribal areas of Jawadhu hills (Vellore and Tiruvannamalai districts), Kalrayan hills (Salem and Villupuram districts), Shervaroy hills and Arunuthu hills (Salem District), Sitheri hills (Dharmapuri district), Kolli hills (Namakkal district) and Pachamalai (Salem and Tiruchirapalli districts) by adopting suitable soil and water conservation measures. Soil and water conservation

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### **3.1. Command Area Development and Water Management Programme under Accelerated Irrigation Benefit Programme**

Command Area Development and Water Management Programme of Accelerated Irrigation Benefit Programme is a Centrally Sponsored programme being implemented in Tamil Nadu with the financial assistance shared between the Central and State Government on 50:50 basis. The main objective of this programme is to improve Water Use Efficiency in canal irrigated areas. The major components are On Farm Development works, Rotational Water Supply, Field Drains and Participatory Irrigation Management.

#### **On Farm Development works**

The Planning of the construction of On Farm Development works is being done by taking into the consideration of the needs of both the head reach and tail end farmers in such a way that the interference of the head reach farmers is eliminated and giving way to tail end farmers for irrigation water without any time lag. This is the starting point for establishing equity in the entire sluice command. This has been achieved in all the projects using optimum flow block concept. The unit cost is Rs.25,000/- per Ha. in all command areas.

The main items of works executed under the component of Construction of field channels are:

- i. Lining of field channels
- ii. Construction of new field channels
- iii. Construction of Division and Diversion Boxes
- iv. Construction of Drops.
- v. Construction of Bed Dams.

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### Rotational Water Supply (Or) Warabandi

Rotational Water Supply or Warabandi is a system of equitable water distribution, by turns, according to a predetermined schedule specifying the day, time and duration of supply to each irrigation in proportion to holding in an outlet command.

Warabandi or Rotational Water Supply schedule is prepared by the staff of Agricultural Engineering Department after executing the On Farm Development Works and handed over to farmers for implementation. The unit cost is Rs.300/- per Ha. As per the revised new financing pattern of Government of India, this component will be taken up with State Government funds only.

### Participatory Irrigation Management (PIM):

At the Farm level, participation of farmers plays a major role in the execution of Command Area Development Programme works and in ensuring equitable distribution of water to each individual field at the right place with the right quantity as per water requirements of crops. Agricultural Engineering Department has been playing a crucial role in the past two decades in the above thrust areas.

The necessity of involving farmers in water management has been recognized by the Agricultural Engineering Department based on the following assumptions:

- water distribution costs would get reduced
- maintenance of the irrigation systems at micro level would be achieved
- Beneficiaries would have sense of owning the system, which would motivate economic use of water.

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Nationalised Bank in the name of any one of the office bearers of Water Users Association and Superintending Engineer. The interest accrued out of the deposit is utilised to enable them to look after the pertinent routine activities of the Associations and maintenance and repair works of infrastructure created under Command Area Development and Water Management Programme.

For the maintenance of the assets, the Water Users Associations periodically meet (one or two times in a quarter) and identify the repair and maintenance works, if any, to be attended in the next quarter. Necessary estimate for that work is approved by the Assistant Executive Engineer and repair works are carried out by Water Users Associations.

During 2013–14, Command Area Development and Water Management Programme were implemented in an area of 23,275 Ha. with an expenditure of Rs.5,053.88 Lakhs in eight ongoing commands viz., 1) Vaigai Project (Ramanathapuram, Sivagangai and Madurai Districts), 2) Kodaganar Reservoir Project (Dindigul District), 3) Kalingarayan Anaicut Project (Erode District) 4) Varadhamanadhi reservoir Project (Dindigul District), 5) Manimuktha Nadhi System (Villupuram and Cuddalore Districts), 6) Cheyyar Anaicut System (Thiruvannamalai District), 7) Ellis Anaicut Project (Villupuram District) and 8) Pelandurai Anaicut Project (Cuddalore District).

During 2014–15, it is proposed to continue the programme based on the revised Guidelines of Command Area Development and Water Management Programme issued by the Government of India to cover an area of 23,439 Ha. at an outlay of Rs.11,582.62 Lakhs in six ongoing commands viz. Vaigai Project (Ramanathapuram,

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- effectiveness of the system would improve
- Reliability of assured water supply made known to the beneficiaries would also motivate them to go for appropriate inputs leading to higher productivity.

### Involvement of Water Users Associations

The following 3-tier system was adopted by Agricultural Engineering Department in motivating the farmers for group action in a standardized pattern under Societies Registration Act 1975.

- 1) Farmers Councils at the sluice outlet
- 2) Farmers council at irrigation division level (at distributory level)
- 3) Farmers Federation at Project level which is the Apex body.

The Tamil Nadu Government enacted the "Tamil Nadu Farmers Management of Irrigation Systems Act 2000" (TNFMIS Act 2000). Under this act, elections will be held by the Water Resources Organisation of PWD, Tamil Nadu in various commands in 1) Water users Association, 2) Distributory committee and 3) Project committee. Totally, 1910 Water Users Associations / Farmers' councils were formed in 33 Commands covering an extent of 9.357 L. Ha.

With a view to strengthen the Water Users Associations, financial assistance in the form of One Time Functional Grant of Rs.1,000/- per ha was released (Centre share Rs.450/-, State share Rs.450/-, farmers' share Rs.100/-) upto 2013-14. The unit cost is now increased to Rs.1,200/- per ha as per the new guidelines (Centre share Rs.540/-, State share Rs.540/-, farmers' share Rs.120/-) from 2014-15 onwards. One Time Functional Grant along with the Farmers' share is deposited in a joint account in a

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Sivagangai and Madurai Districts), Kalingarayan Anaicut Project (Erode District), Manimuktha Nadhi System (Villupuram and Cuddalore Districts), Cheyyar Anaicut System (Thiruvannamalai District), Ellis Anaicut Project (Villupuram District) and Pelandurai Anaicut Project (Cuddalore District).

### 3.2. World Bank Aided Tamil Nadu IAMWARM Project

The Irrigated Agriculture Modernisation and Water bodies Restoration and Management (IAMWARM) Project is being implemented with the assistance from World Bank with an objective of increasing agriculture productivity & farm power in canal irrigated areas of Tamil Nadu. The project has been originally designed over a period of six years from 2007-08 to 2012-13 and then extended up to September 2014 with integrated approach by the Public Works Department, Agriculture, Agricultural Engineering, Horticulture, Agricultural Marketing, Animal Husbandry, Fisheries and various other departments. The project outlay of Rs.15,909 Lakhs is earmarked for Agricultural Engineering Department for taking up the following components in 51 sub-basins

- a) Installation of Micro Irrigation Systems in sub-basin areas with an aim to increase the irrigation efficiency and to save ground water thereby reduces the pumping hours of irrigation pump sets which leads to savings in electricity and to achieve more income per drop of water
- b) Construction of farm ponds in the sub-basin area in order to conserve and utilise rain water during the critical crop period by the farmers. Farm ponds wherever feasible are also used as fish pond to derive additional income to the farmer.

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- c) Construction of Rain Water Harvesting Structures to recharge the ground water in the sub-basin area.
- d) Supply of farm machinery to Water Users Associations so as to increase the yield and income of the farmers through farm mechanisation.
- e) Conveyance of water to the ayacut area below the sluice outlet through buried pipe line to reduce the conveyance losses and to improve the controlling system of irrigation water in a closed conduit by the use of hydrants. It saves more water than the conventional irrigation practices through earthen field channel.

The IAMWARM scheme is being implemented from 2007-08 onwards and upto 2013-14, an area of 41,918 Ha. has been covered under Micro Irrigation System (MIS), 2,653 Nos. of Farm Ponds were constructed, 800 Farm machinery/implements were distributed to Water Users Associations(WUAs) for hiring them to sub basin farmers, 861 Rain Water Harvesting structures were constructed and 12 Improved Water Conveyance systems were installed at the total expenditure of Rs.15,288 Lakhs since inception.

As the IAMWARM project is likely to be closed by September 2014, it is proposed to take up the MIS works in 1,475 Ha. in the following sub basins: Pambar, South Vellar, Upper Vellar, Kottakaraiyar, Manimuthar, Arjuna nadhi, Palar, Aliyar, Agniar, Ambuliyar, Koundanyanadhi, Poiney, Swethanadhi, Pennaiyar, Chinnar, Anavari Odai, Upper Gundar, Therkar, Upper Vaigai, Varattar Nagalar, Singottaiyar, Sindapalli Uppodai, Kalingalar, Nichabanadhi, Araniar, Kosasthalayar, Nallavur, Ongur, Markandanadhi, Pullampadi / Kambainallur, Kovilar, Gadilam, Pambar to Thirukovilur, Thurinjalar, Gomukhinadhi, Uthirakosamangaiyar, Giridhamal, Deviyar, Sevalaperiyar / Mudangiar, Vaippar Main River, Uppodai Hanumanathi,

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6000 units of HDPE pipes at no cost to farmers. Under the programme, 5,864 units of HDPE pipes each consisting of 30 Nos. of 90 mm diameter HDPE pipes were supplied to the delta district farmers at a cost of Rs.925.52 Lakhs. During 2013, Mettur dam could be opened on 02.08.2013 leaving no scope for Kuruvai paddy cultivation using canal irrigation. Due to the free distribution of HDPE pipes, Kuruvai paddy could be covered in an extent of 2.04 Lakh acres in 2013-14 as against the normal extent of 1 Lakh acres in the filter points region.

During 2014-15 also, the water storage position is not comfortable for opening on the scheduled date for which Hon'ble Chief Minister, 06.06.2014, has announced the Special Kuruvai Package-2014 for the supply of 7,000 units of water conveyance HDPE pipes to farmers at a cost of Rs.14 Crores for reducing the water conveyance loss. Further, 200 Nos. of 8 row Paddy Transplanters at a cost of Rs.400 Lakhs and 200 Nos. of 2 row Paddy Power Weeders at a cost of Rs. 60 Lakhs would be distributed for farmers groups in six Delta Districts for helping the farmers in timely completion of transplanting and weeding operations.

### 3.5. Community bore well scheme in Sivagangai District.

Based on the announcement made by Hon'ble Chief Minister during the Collectors Conference 2013, the Government has sanctioned a sum of Rs.320 Lakhs under National Agriculture Development Programme to be disbursed as 50% subsidy cost of 150 bore-wells to farmers groups in Sivagangai District. A user group consisting of 10-15 Nos. of farmers covering a minimum of 10 Hectares per Bore well are being formed and registered as a group. 50% of Bore well cost should be paid as contribution by the

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Karumeniyar, Theniar, Adayar, Cooum, Cheyyar & Kiliyar, Paraliyar, Kayalkudiyar, Amaravathy and 38 Farm ponds in Manimuthar, Agniyar and Ambuliyar sub basins and 23 Rain Water Harvesting structures in Amaravathy sub basins with a total outlay of Rs.621.46 Lakhs during the year 2014-15.

### 3.3. Provision of Diesel Engine Pumpsets with Raingun / Portable Sprinkler Irrigation System for critical life saving supplemental Irrigation

Hon'ble Chief Minister has made an announcement under Rule 110 on the Floor of the Assembly on 06.05.2013 to provide 700 units of diesel engine with rain gun and mobile sprinklers at nominal rent for critical life saving supplemental irrigation. The portable irrigation system comprising (i) Diesel Engine Pumpset (ii) Raingun Portable Sprinkler Irrigation system would be procured by the Agricultural Engineering Department for providing to the farmers at free of cost for life saving supplemental irrigation. Diesel and transport charges are met by the farmers. This project is implemented under National Agriculture Development Programme. During 2013-14, 350 sets of Diesel Engine Pumpsets with Raingun irrigation systems / Portable Sprinkler Irrigation Systems have been procured as a pilot project for an outlay of Rs.199.10 Lakhs.

### 3.4. Kuruvai package for delta region.

During 2013-14, Mettur dam could not be opened on scheduled date for Kuruvai paddy cultivation. Hence, with an aim to bring more area under filter points, the Hon'ble Chief Minister has announced a Special Kuruvai Package-2013 for Rs.18 Crores for delta region in which a sum of Rs.12 Crores has been earmarked for distribution of

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used group to agricultural engineering department. Steps have been taken to identify the farmers groups and entire 150 borewells will be drilled in 2014-15.

### 3.6. Thane Cyclone Relief measures

As a part of Thane Special Livelihood Package announced by Hon'ble Chief Minister during 2011-12, 600 Nos. of Power operated Chain Saws have been purchased at a cost of Rs.300 Lakhs and handed over to Horticulture Department (500 Nos.) and Agriculture Department (100 Nos.) for cutting and removing the fallen trees in Cuddalore and Villupuram District.

For providing irrigation facilities, 122 Bore wells have been drilled at Cuddalore district and 14 Borewells, at Villupuram District at a total cost of Rs.856.20 Lakhs. During 2014-15, another 23 Bore wells would be drilled at Cuddalore district.

### 4. Agricultural Mechanization

Due to shortage in farm workers, farmers are not in a position to undertake various field operations in time. Hence, modernization of agriculture through Agricultural Mechanization is inevitable. Availability of farm power coupled with efficient and judicious use of farm implements/machinery enable efficient utilization of various inputs such as seeds, fertilizers, plant protection chemicals and water for irrigation besides eliminating the drudgery in various farm operations from land preparation to post harvest technology and value addition.

Productivity of the farm depends considerably on the availability of farm power and its efficient use. The States which have higher farm power availability per hectare show

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higher productivity. The Agricultural Mechanization is the only way out to face the challenge of farm workers' shortage. The educated youth feel discouraged to work in farms due to human drudgery. Migration of farm workers from rural to urban areas for other works is a common phenomenon in Tamil Nadu. Farm mechanization has been helpful to bring about significant improvement in agricultural productivity by bridging the demand-supply gap of farm workers. The increase in food grains production is possible only when heavy demand for tractors, power tillers and other Agricultural machinery / implements by the farmers are met.

During the year 2011-12, a total of 3,438 crop based machineries had been given to 1,283 PACCS by the Agricultural Engineering Department at a cost of Rs.2,536.50 Lakhs for hiring out to individual farmers / farmers group.

#### **4.1. Agricultural Mechanisation Programme under National Agriculture Development Programme (NADP)**

The agricultural machinery/implements such as multi crop thresher, paddy transplanter, nursery media filling machine, reaper, post hole digger, planters, tree pruners, Track trolley, tractor and power tiller driven equipments etc., are given to the individual farmers under NADP with subsidy assistance as per Sub Mission on Agricultural Mechanization (SMAM) guidelines. The Agricultural Engineering Department is providing higher subsidy assistance to SC, ST, women farmers, Small and Marginal farmers, besides giving subsidy assistance for other farmers for purchasing agricultural machinery / implements subject to the ceiling limit prescribed for each implements.

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higher HP power weeder with rotavator to the above farmers groups at a total financial outlay of Rs.738 Lakhs with 100 percent financial assistance from Government in order to hire out the same to the other farmers. As this programme is gaining momentum in Vellore district, 20 Rural youth groups comprising of 16 youth including Small and Marginal Farmers are proposed to be formed for distribution of machineries at subsidized cost during 2014-15 with a financial outlay of Rs.410 Lakhs.

#### **4.3. Demonstration of newly developed Agricultural Machinery and Implements**

Through conduct of extensive field demonstrations at farmers' field, efforts are taken to popularize newly developed agricultural machinery / implements such as raised bed planter, laser land leveller, sugarcane trash shredder, tractor operated leaf shredder, self propelled paddy transplanter, power weeder, zero till seed drill, Turmeric harvester, Tractor PTO driven two row turmeric digger with elevator etc., among the farmers.

During the last two years, 1,041 demonstrations of farm machinery / implements have been conducted at a total cost of Rs.31.23 Lakhs and farm implements worth of Rs.13.66 Lakhs were purchased for purpose of conducting demonstrations. This programme will be implemented with 100% assistance from Central Government under SMAM. During 2014-15, it is proposed to conduct 550 demonstrations at an outlay of Rs.16.50 Lakhs for the benefit of 11,000 farmers and to purchase newly developed machinery at a cost Rs.23.50 Lakhs for conducting demonstration.

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This facilitates the farmers to take up the timely sowing, transplanting, weeding, plant protection and harvesting in order to enhance the agricultural production and productivity. The acute farm workers shortage is being mitigated by increased use of farm machinery/implements. During 2011-12, subsidy assistance of Rs.2,704.47 Lakhs has been given to farmers for purchasing 8,593 Nos. of agricultural machinery and implements. During 2012-13, subsidy assistance of Rs.7,431.11 Lakhs has been given to farmers for purchasing of 90,931 agricultural machinery / implements / trays. During 2013-14, a subsidy assistance of Rs.4,799.82 Lakhs was provided to the farmers towards the distribution of 14,343 Nos. of Agricultural Machinery and Implements along with 39,740 Nos. of trays for raising rice nursery.

It is proposed to continue the programme during 2014-15 also with a financial outlay of Rs.3,000 Lakhs.

#### **4. 2. Formation of farmers groups including free package of machinery and Training on operation and maintenance of farm machinery**

The State Government has initiated sincere steps in the last two years to form farmers' groups in all districts for distribution of machineries after giving training on operation and maintenance of various farm machineries. For the last two years, 59 farmers' groups were formed and 360 nos of farm machinery have been purchased at a cost of Rs.352.46 Lakhs and imparting training on operation and maintenance of farm machinery at a cost of Rs.18.65 Lakhs to the farmers' groups.

During 2014-15, it is proposed to give Power tiller, Paddy transplanter, Paddy weeder, Zero till seed drill and

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#### **4.4. Training programme to farmers in the field of Agricultural Mechanisation**

Advancement in agricultural machinery and implements technology used for paddy and sugarcane cultivation, plant protection equipments, machinery for dry land agriculture and conjunctive use of water through Micro Irrigation systems are exposed to the farmers and rural youth for streamlining the application of Agricultural Machinery / Implements used in various farm operations through refresher course trainings. Awareness among stakeholders is created for promoting farm mechanization in a big way in addition to imparting the first hand experience on Repair and Maintenance of Agricultural Machinery. During 2011-12 onwards, 240 training programmes have been conducted at a cost of Rs. 66.95 Lakhs.

During 2014-15, it is proposed to conduct 150 training programmes to farmers at an outlay of Rs.39 Lakhs with 100% financial assistance from Central Government under SMAM.

#### **4.5. Training to rural youth on Operation, Repair and Maintenance of the newly developed Agricultural Machinery / Implements**

Skilled man power engaged in the repair and maintenance of the commonly used agricultural machinery / implements is shrinking day by day on one side and another side, advanced hi-tech, hi-value and hi-productive agricultural machinery / implements are getting popularisation among the farmers. To inculcate the rural youth in skill power development, a three months training programmes on the repair and maintenance of Tractors / agricultural machinery / implements are implemented. The reputed firms have given job opportunities to some of these trained rural youth in the past. Training programmes to rural youth on operation and maintenance of the newly developed

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agricultural machinery / implements are conducted in six workshops functioning at Tiruvarur, Vellore, Coimbatore, Trichy, Madurai and Tirunelveli. During 2011-2012 onwards, 544 training programmes are conducted at a total cost of Rs.69.64 Lakhs. During 2014-15, it is proposed to continue this scheme at an outlay of Rs.57.30 Lakhs.

#### **4.6. Agricultural Mechanisation Programme under the Centrally Sponsored Scheme of Macro Management of Agriculture.**

The scheme of popularising agricultural machinery / implements in agriculture has been implemented under the Centrally Sponsored Scheme of Macro Management of Agriculture with the financial assistance from the Centre and State Government on 90:10 basis. Under this scheme, subsidy assistance is provided to farmers to purchase Tractors, Power Tillers and Rotavators as per the norms of the Government of India guidelines. During the past three years, a sum of Rs.1,628.57 Lakhs has been given as subsidy assistance to farmers to purchase of 3,946 agricultural machinery such as Tractors, Power Tillers and Rotavators. This programme has been withdrawn by Government of India and subsumed under SMAM.

#### **4.7. Agricultural Mechanisation Programme under the Centrally Sponsored Scheme of Sub Mission on Agricultural Mechanisation**

Under the Centrally Sponsored Scheme of Sub Mission on Agricultural Mechanisation, the Agricultural Mechanisation Programme is proposed to be implemented during the year 2014-15 with the financial assistance from the Centre and State Government is 75:25. The main objectives of this scheme are increasing the reach of farm mechanisation to small and marginal farmers and to the regions where availability of farm power is low, offsetting

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#### **4.8. Demonstration of Pulses and Millets Machinery at Farmers Field.**

With the goal of promoting mechanization in post harvest management system, reducing the losses of perishable farm produce during storage period, implementing latest technologies for value addition of farm product and preserve its quality, disseminating and adoption of new technologies among farmers and also for popularising the agricultural machinery/ implements among the Small / Marginal / SC / ST / Women / Other farmers through demonstration, Post Harvest Technology and Management scheme is implemented in Tamil Nadu from the year 2013-14 with 100 % Central Government assistance under the Central Sector Scheme. During the year 2013-14, an amount of Rs.186 Lakhs was sanctioned towards the purchase of Multi-crop thresher, Maize Husker Sheller and Mini Dhal Mill for conducting demonstrations. After the completion of demonstration for at least 12 months, the above machinery will be handed over to the SHG / TANWABE/ User Group/Farmers group/WUA/Commodity group in each district at 50% of the cost price of the machinery. The scheme is proposed to be implemented during 2014-15 in 30 districts of Tamil Nadu.

#### **5. Remote Sensing and Geological Information System (GIS)**

Mapping of data is essential for proper watershed planning. The assistance of Geographical Information System is very much needed right from the level of data illustration to manoeuvrings mapped data, processing to generating final maps as per the requirements etc. Remote Sensing Techniques can be used in watershed development projects in selection of watersheds through prioritization of natural resource information and integrating through Geographical Information System for arriving specific

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adverse 'economies of scale' and 'higher cost of ownership' of high value farm equipment by promoting "Custom Hiring Centre" for agricultural machinery and passing on the benefit of hi-tech, high value and hi-productive agricultural machinery to farmers through creating hubs for such farm equipment.

The Mission Components are

- 1) Promotion and Strengthening of Agricultural Mechanization through Training, Testing and Demonstration
- 2) Demonstration, Training and Distribution of Post Harvest Technology and Management (PHTM).
- 3) Financial Assistance for Procurement of Agricultural Machinery and Equipment
- 4) Establishment of Farm Machinery Banks for Custom Hiring
- 5) Establishment of Hi-Tech, High Productive Equipment Hub for Custom Hiring
- 6) Promotion of Farm Mechanisation in Selected Villages and
- 7) Financial Assistance for Promotion of Mechanized operations/hectare carried out through Custom Hiring Centres.

Under this scheme, subsidy assistance is provided to the farmers for the purchase of tractor, power tiller, Rice transplanter, specialized self propelled machinery, self propelled horticultural machinery, tractor/power tiller (below 20 BHP) driven equipments, tractor (above 20 to 35 BHP) driven equipments, tractor (above 35 BHP) driven equipments, manual / animal drawn equipments / implements / tools, plant protection equipments and other important agricultural implements / machinery. During 2014-15, this scheme is proposed to be implemented with a subsidy amount of Rs. 5,470 Lakhs.

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recommendation for sustainable development and for monitoring and evaluation of watershed projects. This GIS cell functioning in Agricultural Engineering Department has completed the Digitisation of the Revenue Village maps of Nagapattinam (Keelaiyur, Kilvelur, Nagapattinam, Sembanarkoil, Sirkazhi, Thalainayar and Tirumarugal blocks), Cuddalore (Cuddalore, Kurunchipadi, Mangalore and Panruti blocks) and Sivaganga (Sivaganga, Manamadurai, Kalayarkoil and Illayankudi blocks ) Districts in 1:5000 scale under the Rashtriya Sam Vikas Yojana (RSVY) project. The digitized Cuddalore and Nagapattinam block maps have been shared with NIC for establishing the NRDMS (National Resources Data Base Management System) GIS centres at cuddalore and Nagapattinam. The studies done by this cell sponsored under State Land Use Board (SLUB)

1. District Watershed Atlas in 1: 50000 scale.
2. District Soil Watershed Atlas in 1: 50000 scale.
3. Soil Watershed Atlas in CD's.
4. Status report on Eco-degradation of Perambalur District.
5. Hydrology of Small watershed.
6. Land use Zonation maps for Salem & Theni District using ancient land use.

This cell will be in a position to provide support and co-operation for the creation of TNGIS. The total number of revenue villages in Tamil Nadu is 16,888 out of which 13,744 Nos. of village maps are available in the concerned districts and the balance 3,144 Nos. of village maps have been procured under Part-II scheme during 2013-14. Out of the village maps made available so far, 2,435 Nos. of villages has been digitized. District GIS cell has been entrusted with the task of digitizing the village maps in a phased manner. During 2012-13, study sponsored by SLUB

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on Cadastral level information system on Minor Irrigation tanks in 1:5000 scale using Remote Sensing and GIS in Namakkal district – Tamil Nadu is under progress.

## 6. Custom Hiring of Agricultural Machinery to Farmers

### 6.1. Land Development Machinery

In order to take up Land Development works such as land levelling, land shaping and puddling works, 91 Bulldozers, 63 Laser Land Levellers, 215 Tractors and 2 Hydraulic Excavators are available with the department for hiring out to farmers at nominal hire charges. These machinery also cater to the need of relief works during flood and natural calamities.

Besides, for taking up Transplanting and Harvesting works, 7 Paddy transplanters, and 50 Paddy combine harvesters, are also available for hiring out to farmers at nominal hire charges. The details of machinery available for custom hiring in each district and the hire charges are furnished in the table. This programme of custom hiring of agricultural machinery to farmers will be continued during the year 2014-15.

### Achievement of custom hiring of LD Machineries to farmers for the past three years

in Hours

| Machineries       | 2011-2012 | 2012-2013 | 2013-2014 |
|-------------------|-----------|-----------|-----------|
| Bulldozer         | 92,334    | 86,848    | 65,861    |
| Tractor           | 1,60,396  | 1,73,283  | 1,51,765  |
| Combine Harvester | 17,840    | 15,986    | 16,057    |

### 6.3. Online booking of Agricultural Machinery under Custom Hiring

Agricultural Engineering Department offers custom hiring of farm machineries like Tractor, Dozer and Harvesting Equipments to farmers on need basis. Presently, the farmer has to contact the nearest Assistant Executive Engineer, AED office, in person, to submit the mandatory application along with necessary documents and make payment for the required working hours. Once payment made, the officials visit the farmer's field and the machinery will be allotted to the farmer based on the seniority in booking.

In order to avoid the delay in getting the machinery on rental, an Web based / Mobile based application has been developed by Rural Technology and Business Incubator (RTBI), IIT, Chennai, and hosted on IIT Chennai server for testing. The farmer needs to be registered in the Farm Crop Management System (FCMS) data base as one time entry for availing the mobile booking facility. The farmer's name, mobile number, village and other details are captured during the registration process.

For booking machinery on rental, the farmers need to call the number (044-64506996-IIT, Chennai) and book the machinery through IVRS system. Based on the calling mobile number, the server identifies the caller (farmer) and his village details and provides options based on the data (Machinery availability data entered by the sub divisional officers.) available in the database. Once the booking process completed, an SMS will be sent to the farmer and Sub-divisional officer to confirm the booking. The sub-divisional officer will allocate the machinery based on the field visit and advance payment made towards the working hours.

## 6.2. Minor Irrigation Machinery

The Agricultural Engineering Department is having a fleet of machinery, under minor irrigation scheme viz., 30 Rotary Drills, 10 Percussion Drills, 19 Mini Drills, 63 Hand Boring Sets, 7 Long Hole Equipments and 33 Rock Blasting Units for hiring out to the farmers at reasonable hire charges for taking up sinking of new bore wells and revitalisation of open wells. Also, 8 Resistivity Meters and 2 Electrical Loggers are provided to farmers for locating well sites and aquifers on hiring basis.

### Achievement of custom hiring of MI Machineries to farmers for the past three years

| Machineries                  | 2011-2012 | 2012-2013 | 2013-2014 |
|------------------------------|-----------|-----------|-----------|
| Rotary Drill(Meter)          | 25,470    | 37,799    | 49,587    |
| Percussion Drill(Day)        | 2,494     | 2,307     | 2,186     |
| Mini Drill(Meter)            | 10,658    | 11,262    | 11,414    |
| Hand Boring Set(Meter)       | 24,215    | 22,091    | 20,840    |
| Long Hole Equipment(Day)     | 1,070     | 1,077     | 1,077     |
| Rock Blasting unit(Blasting) | 5,400     | 5,370     | 4,991     |
| Resistivity Meter(Point)     | 2,211     | 1,388     | 1,539     |
| Electrical Logger(Tube Well) | 133       | 112       | 219       |

This system has been tested in Vellore District and the following observations were made in order to improve the mobile booking application for operating throughout the state.

- The Sub-Divisional offices should be provided with internet facility.
- Payment gateway to be included in the online application.
- Machinery tracking system to be included in order to avoid unnecessary road march.

The Department is in the process of improving the online booking system.

## 7. New Innovative Schemes

### 7.1 Provision of 500 nos. of Solar Powered pumping system (Non-tracking type)

The scheme was sanctioned for the year 2012-13 for providing 500 nos. of 5 Hp AC solar powered pumping system (non-tracking type) to the farmers preferably in delta districts, with 80% subsidy of which 50% assistance is provided under NADP and 30% assistance from Ministry of New and Renewable Energy (MNRE), GOI. Tamil Nadu Energy Development Agency (TEDA) finalized the companies through tender for the implementation of the scheme during 2013-14. The identification of beneficiaries was done by Agriculture Department officials and about 1400 nos. of applications were canvassed from the farmers during 2013-14. The feasibility survey for installation of the system for the identified beneficiaries was taken up and applications were shortlisted. Preference is being given to the delta district farmers. Based on the receipt of farmer's contribution of 20% amount, on "first come first served" basis, work orders are being issued to the approved



companies and the installations are being done in the farmers' field. Work orders have been issued for 425 locations and installations have been completed in 160 places, so far. Action has been taken to complete the installation in the remaining sites during 2014-15.

### **7.2. Provision of Solar PV Pumping System with automatic tracking facility linked with appropriate Micro irrigation system**

The Hon'ble Chief Minister has announced under rule 110 the scheme of providing a comprehensive package of Solar powered pumping system with 80% subsidy, linked with suitable Micro irrigation system as per the existing norms along with forward linkage of precision farming / front-end technologies, crop specific improved cultivation methods etc. to the progressive farmers in the year 2013-14. The scheme was proposed with the following objectives viz., to ensure energy security to the farmers for irrigating the crops with no recurring expenditure, to promote non-conventional energy in agriculture sector, to improve the water use efficiency by judicious use of irrigation water and thereby achieve improvement in agricultural production and productivity of the crops under this system.

The scheme was sanctioned for Rs.80 Crores for providing 2000 Nos. of 5 Hp AC solar powered pumping systems 4800 Wp capacity each with automatic tracking facility, at 80% subsidy assistance to the farmers, of which, 50% assistance (Rs.50.00 Crores) is provided under National Agricultural Development Programme (NADP) and 30% assistance (Rs.30.00 Crores) under Ministry of New and Renewable Energy (MNRE). In anticipation of NADP and MNRE assistance, the Government sanctioned Rs.80 Crores as advance for implementation of the scheme.

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to fetch better prices for their produce. To minimize the storage loss and quality deterioration in Onion and to get better price by farmers, the Hon'ble Minister for Agriculture during the Budget Session 2013-14 has announced to create Scientific Storage structures of 2 to 20 MT capacity with 50% subsidy assistance to the individual farmers in 12 Onion producing districts at an outlay of Rs.6 Crores. This scheme has been formulated by seeking subsidy assistance under National Agricultural Development Programme.

A pilot project was implemented under NADP assistance during the year 2013-14 for creation of Onion storage structures varying in sizes from 2 MT to 20 MT for a total capacity of 250 MT in 11 major onion growing districts of viz., Tiruchirapalli, Perambalur, Dindigul, Tirunelveli, Tirupur, Erode, Madurai, Theni, Virudhunagar, Namakkal and Thoothukudi benefiting 27 farmers at a total cost of Rs.10 Lakhs. To get the benefit of this scheme, farmer should erect onion storage structure according to proposed plan only. The construction cost of the proposed onion storage structure is about Rs.10,000/- per MT and 50% of the construction cost i.e. Rs.5,000/ MT is provided as subsidy. An evaluation of the structure will be taken up by Tamil Nadu Agriculture University, Coimbatore for its suitability of the programme on large scale.

### **7.4. Promotion of Solar Chilli Dryer**

The scheme is proposed to reduce the time taken for drying of chillies and to get desired level of moisture content and to improve the quality of produce without impairing colour and pungency, so that farmers could get more income from the produce. During the year 2013-14, 20 Nos. of Poly house tunnel type Solar Chilli drier were proposed

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The rates and companies for the supply and installation of the solar powered pumping systems were finalized through tender process during the month of February 2014 and applications were mobilized from the willing farmers. The implementation of the scheme is under progress.

The 2000 numbers of 5 Hp submersible AC Solar pumps are being installed to pump water from Bore wells, from open wells and from Ground level reservoir / Surface storage structures. Out of the proposed 2000 Nos, it has been proposed to provide 800 Nos. of solar powered pumping system linked with Micro irrigation system for Agricultural crops and 1200 Nos. for Horticultural crops. Identification of beneficiaries is in progress. The scheme is to be continued for the year 2014-15 for completing the target of 2000 Nos. of Solar powered pumping systems.

The cost of Micro irrigation system to be installed suitable to the crops cultivated would be met from the ongoing Micro Irrigation Scheme in the state, with 100 % subsidy for small and marginal farmers and 75 % subsidy for other farmers. Dovetailing of existing schemes of Agriculture department & Horticulture department would be done to provide improved technology linkage.

### **7.3. Promotion of Onion Storage Structure (Natural air ventilated)**

The price of onion is usually less when the production is surplus. There are certain problems which arise during conventional storage of onion viz. loss in weight, sprouting and rotting of bulb. To overcome these losses, onion must be stored in scientific manner. The onion storage as per this scheme will minimize the storage losses and quality deterioration which will in turn help the farmers

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4 each in 5 major Chilli growing districts at a total cost of Rs.40 Lakhs to the Chilli growing farmers' groups at 100% subsidy under National Agricultural Development Programme. The construction of 12 Nos. of Solar Chilli drier 4 Nos. each in Sivaganga, Tirunelveli and Thoothukudi districts were completed during 2013-14 at a total cost of Rs.24 Lakhs. The provision of balance 8 Nos. of Solar Chilli drier 4 Nos. each in Virudhunagar and Ramathapuram districts will be completed in 2014-15.

### **8. Vision 2023**

Hon'ble Chief Minister of Tamil Nadu has released the "Vision Tamil Nadu 2023", for development of robust infrastructure for agriculture to achieve goals of the Second Green Revolution to increase farmer's income. Agricultural Engineering Department is focusing on managing labour shortage in agriculture operations, in-situ moisture conservation to avoid soil erosion, land preparation for agriculture and effective use of water for increasing the crop productivity by promoting Farm mechanisation, Land development and Micro irrigation activities for sustainable agricultural production.

Agricultural Engineering Department has programmed to bring about 5 L.Ha of fallow land into cultivation by focusing on Soil quality improvement and wasteland rehabilitation, to bring an area of 1.80 L.Ha under Micro irrigation system and to promote agricultural mechanisation with a total financial outlay of Rs.22,114.13 crores under PPP mode during the period ending 2023.

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## 7. TAMIL NADU WATERSHED DEVELOPMENT AGENCY

Irrigation is a powerful tool which ensures food security by offering protection against adverse seasonal conditions, sustained livelihood with stable farm income and greater opportunity for multiple cropping and crop diversification. Water and land are the two essential inputs for agriculture. Tamil Nadu is a water scarce state. Per capita (annual) water availability is only about 900 cubic meters as against the all-India average of 2200 cubic meters. The surface irrigation potential has been virtually exhausted while groundwater irrigation has increased due to rural electrification, the availability of affordable irrigation pump sets and free electricity provided by the state Government for agriculture use. Strengthening the irrigation infrastructure is the most important pre-requisite to the Sustainable growth of the Agriculture sector. With the focus on enhancing the productivity and increasing the income level of small and marginal farmers, Tamil Nadu Watershed Development Agency was established in 2002.

The primary objective is land development through prevention of soil erosion, water conservation and plantation activities. The watershed development programmes seek to promote economic development of village community, which is directly or indirectly dependent on watershed through optimum utilization of natural resources to mitigate drought and ecological degradation and generation of employment opportunities.

In tune with the State's attempt to promote water saving techniques, following watershed development programmes are implemented by Tamil Nadu Watershed Development Agency.

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Rs.31,361.86 Lakhs have been spent by the District Rural Development Agency and District Watershed Development Agency of 17 districts and a total area of 5.760 L.Ha. have been treated. In the last seven years, no new projects were sanctioned by Government of India. The Government of India have released the funds upto December 2013 and release of funds are stopped. All the Projects are now under Completion Stage and Impact Evaluation of the completed projects are in progress.

The Blockwise programme under implementation is given in Table.

### 2. Integrated Wasteland Development Programme (IWDP)

This scheme is implemented with an objective to harvest the rainwater and to bring the degraded lands into productive use under non-forest wasteland area. This programme is being implemented in 96 blocks of 24 districts.

On project basis, the watersheds are sanctioned by Government of India. Government of India have sanctioned 910 watersheds in 80 projects at a total cost of Rs.26,220 Lakhs to treat a total area of 4.576 L.Ha.

A total area of 4.161 L.Ha. have been treated in 24 districts utilizing the Government of India and State Government released amount of Rs.24,169.69 Lakhs of which Rs.23,882.99 Lakhs have been spent by District Rural Development Agencies and District Watershed Development Agencies.

In the last seven years, no new projects were sanctioned by Government of India. The Projects are under

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- Drought Prone Areas Programme (DPAP)
- Integrated Wasteland Development Programme (IWDP)
- National Watershed Development Project for Rainfed Areas (NWDPPRA)
- Integrated Watershed Management Programme (IWMP)
- Watershed Development Fund (WDF)
- Western Ghats Development Programme (WGDP)

In addition, the following schemes funded by Central Government are also implemented for which TAWDEVA is the Nodal Agency to Agriculture Department.

- National Agriculture Development Programme (NADP)
- National Food Security Mission (NFSM)
- Agriculture Technology Management Agency (ATMA)
- Agriculture Resource Information Systems and Networking (AGRISNET)
- National Project on Management of Soil Health & Fertility

Moreover, it will be the Nodal Agency for National Mission for Sustainable Agriculture from 2014-15.

### 1. Drought Prone Areas Programme (DPAP)

This scheme is being implemented from 1972-73 onwards in 80 notified blocks of 17 districts identified in Tamil Nadu, to mitigate the adverse effects of drought on the production of crops, productivity of land, water and human resources.

1,222 watersheds in 7 batches were sanctioned at a total project cost of Rs.33,670 Lakhs for treating a total area of 6.141 L.Ha. The Government of India and State Government have released Rs.31,696.45 Lakhs of which

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Completion Stage and Impact Evaluation of the completed projects are in progress. The list of blocks is given in Table.

### 3. National Watershed Development Project for Rainfed Areas (NWDPPRA)

National Watershed Development Project for Rainfed Areas (NWDPPRA) aimed at augmentation and stabilization of production and productivity, minimizing ecological degradation, reduction in regional disparity, opening up of greater opportunities for employment of rural poor in the rainfed areas is being implemented in Tamil Nadu from VIII Five Year Plan onwards. The expenditure is shared between Centre and State on 90:10 basis.

With a view to promulgate the twin concepts of Integrated Watershed Management and sustainable farming system further, an area of 1.156 L.Ha. covering 200 watersheds in 18 districts was proposed to be treated under NWDPPRA, during the 11<sup>th</sup> Five Year Plan. The estimated cost for this five year plan was Rs.6,936 Lakhs. Out of the total amount of Rs.4,408 Lakhs released upto 2012-13 to treat an area of 0.734 L.Ha., Rs.935.00 Lakhs was available as balance on 01.04.2013. With this amount, an area of 15,600 Ha. is planned to be treated. An expenditure of Rs.757.360 Lakhs has been incurred by way of treating 12,623 Ha. till March 2014.

During 2014-15, consolidation work with respect to XI Plan NWDPPRA will be taken up. The List of blocks wherein this programme is under implementation is given in Table.

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